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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,073	12/13/2000	David J. Elliott	UV-102J	7710

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EXAMINER	
CROWELL, ANNA M	
ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/736,073	ELLIOTT ET AL.	
	Examiner	Art Unit	
	Michelle Crowell	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16-20 and 23-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,17-20 and 23-29* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,7-13, 17-20, 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826).

Referring to Figures 3 and 10, column 3, lines 27-52, column 4, lines 22-36, and column 7, line 55 – column 8, line 17, Murakami discloses an apparatus which uses a rectangular ultraviolet laser beam 30 and reactive gas to deposit metallic film on the substrate 104. The apparatus includes a chamber 103, glass window 111 (UV window) located on the top of chamber 103, beam expander 107 (beam forming module), rectangular ultraviolet laser beam 30, gas inlet port 102 (gas injection module), gas exhaust port connected to exhaust gas treatment

117 (gas exhaust module), heater 125 (heating elements) and X-Y stage 112 for heating and securely holding the substrate (vacuum chuck), dichroic mirror 109 for adjusting the angle of the rectangular beam, laser oscillator 20 (UV radiation source raw output), and object lens 110.

In addition, while the gas inlet and outlet are stationary, the X-Y stage 112 moves the substrate 104 to the desired position for deposition.

Regarding Claims 7-13 and 25

The apparatus of Murakami is capable of administering the various claimed processes with the appropriate processing materials supplied. (i.e. etching reaction, deposition reaction, oxidation reaction, reduction reaction, melting reaction, reaction for modifying a metallic or non-metallic film, polymerization or UV curing reaction, and doping reaction). Furthermore, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Murakami fails to specifically teach that the gas exhaust module is inside the chamber and at least a second fluid or vapor to the substrate surface.

Referring to Figure 2, column 4, lines 33-40, and column 4, line 64-column 5, line 4, Mannava et al. teaches a processing apparatus having a gas exhaust module 48 located inside the chamber to remove reaction gas products near the substrate. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the exhaust module of Murakami inside the chamber as taught by Mannava et al. in order to remove reaction gas products near the substrate.

Referring to Figure 2, column 6, lines 15-31, Mannava et al. teaches a processing apparatus providing multiple gases 52 and 86 (a second fluid or vapor) to the substrate surface in order to deposit the desired film layer. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami with a second fluid or vapor to the substrate surface as taught by Mannava et al. in order to deposit the desired film layer.

4. Claims 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Elliott et al. (U.S. 5,814,156).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach the wavelength of the UV radiation source raw output, energy level of the rectangular beam, optical elements, two cylindrical refractive elements.

Referring to column 4, lines 4-15, and column 5, lines 53-59, Elliott et al. teaches an apparatus which uses an ultraviolet radiation beam to clean (etch) the surface of a substrate. The

laser source 22 provides a pulsed beam 24 (ultraviolet radiation beam) at wavelengths of 248 nm and 193 nm. Typical energy density levels at 248 nm range from 250-1500 mJ/cm^2 (0.25 – 1.5 J/cm^2). The laser source 22 further includes a beam expanding system 26 (beam forming module) made up of two cylindrical mirrors 54 and 56 (two cylindrical refractive elements). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with the wavelength of the UV radiation source raw output, energy level of the rectangular beam, optical elements, and two cylindrical refractive elements as taught by Elliott et al. in order to ensure the appropriate wavelength and energy level necessary for the desired process. In addition, the cylindrical refractive elements (optical elements) create the rectangular beam in the desired dimension.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Schmidt et al. (U.S. 4,624,330).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach the dimensions of the rectangular beam.

Referring to column 2, lines 47-52, Schmidt et al. shows an ultraviolet beam 6 directed on vessel 1 with a length of 600 mm and width of 1mm.

In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the

claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with the dimensions as shown by Schmidt et al. in order to ensure the appropriate dimension of the rectangular beam necessary for the desired process.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Giapis et al. (U.S. 5,002,631).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach a block shaped manifold.

Referring to Figure 1 and column 3, lines13-15, Giapis et al. teaches a valve-controlled aperture 103 (block shaped manifold) with pump used to exhaust out gaseous reaction products. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with the valve-controlled aperture as taught by Giapis et al. in order for gaseous reaction products to be exhausted.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami (U.S. 6,090,458) in view of Mannava et al. (U.S. 5,174,826) as applied to claims 1,7-13, 17-20, 24-29 above, and further in view of Lee et al. (U.S. 6,374,770).

The teachings of Murakami in view of Mannava et al. are discussed above.

Murakami in view of Mannava et al. fails to teach an electronic control module.

Referring to Figure 1 and column 4, lines 46-50, Lee et al. teaches a CVD apparatus which uses a processor 34 operated by a computer program stored in memory 38 for a deposition reaction. The computer program selects the timing, mixture of gases, chamber pressure, chamber temperature, RF power levels, susceptor position, and other parameters of a particular process. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami in view of Mannava et al. with a processor as taught by Lee et al. in order to control various processing parameters to yield the optimum processing environment for deposition.

Allowable Subject Matter

8. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed February 23, 2004 have been fully considered but they are not persuasive.

Applicant has argued that Mannava clearly shows that the vacuum line is not inside the

reaction chamber 22, but within or adjacent the nozzle 44, and thus Mannava fails to disclose the gas exhaust module inside the reaction chamber as claimed by the applicant. However, Mannava clearly shows that the exhaust module is located in the chamber 22. According to column 1, lines 56-60, column 4, lines 12-15, lines 33-40, Mannava states that the reaction chamber 22 includes a window 32 and a reaction product ejection nozzle 44. Therefore, since the exhaust module 48 is located within the nozzle 44 which is a part of the reaction chamber 22, the claimed requirement of the gas exhaust module located inside the reaction chamber is satisfied. Additionally, exhaust module 48 is located inside chamber 24.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (9:00 - 5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMC
05-05-04

P. Hassanzadeh
Primary Examiner
AU 1763